

Living on a Prairie



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Part I: General Overview of Business

The Prairie Resource Center was established in 2006 with a mission to restore native prairie ecosystems. This center, located at Brushy Creek State Park, serves our state by growing and harvesting native prairie plants to produce seeds. After harvest, these seeds are mixed and distributed to public grounds throughout the state.

These seed mixtures create diverse prairies which support better ecosystems. This means more wildlife, pollinators, and beautiful lands throughout the state. Additionally, prairies are beneficial because they act as water filters and reduce agricultural nutrient runoff.

Part II: Job Specifics

In order to restore some of Iowa’s historical landscape, a lot of work is required. Most of the seeds are harvested from a variety of locations with a special combine. However, not all seeds are ready for harvest at the same time. Many seeds have to be harvested by hand. In order to produce a reasonable amount, these varieties are gardened in cultivated rows.

Once the seeds are collected, they must be screened, dried, filtered, bagged, stored and shipped to public lands. My project during the externship was to improve the inventory system and produce digital maps of prairie gardens and prairie fields. In addition, I worked in the gardens planting, weeding, watering, harvesting, drying and cleaning equipment.

Part III: Introduce the Problem

In order to capture the most seed at the lowest price, a special combine is used at the Prairie Resource Center. While this combine can capture an amazing amount of seed in a short period of time, it is not perfect. Other materials and debris are collected with the seed in the combine.

How do you separate the debris from the seed? We can do this through physical separation! After collecting from the combine, this seed and debris mixture is filtered through a special machine called an Air Screen Cleaner. This machine moves the seeds through a set of screens. For each type of seed, a different set of screens are required. If you were given a sample of seed and debris from the combine, how would you determine what size of filters to use on the machine?

Part IV: Background Content Needed

In order to solve the problem, students will have background knowledge in:

- Measuring Strategies
(To measure the size of the seed)
- Physical vs. Chemical Properties
- Physical separation techniques
- Botany
 - What do seeds look like?
 - How do the individual seeds come apart from the whole?
 - The reproductive cycle of plants

Part V: Business Solution

The Prairie Resource Center researched to find information on the sets of screens they use for each plant’s seeds. They documented all of this information and store it near the Air Screen Cleaner.

Part VI: Student Solutions

Students will use measuring techniques to identify the size of the seeds and screens. Based on this information they will run a few tests to find which screens are most effective to get the desired result.